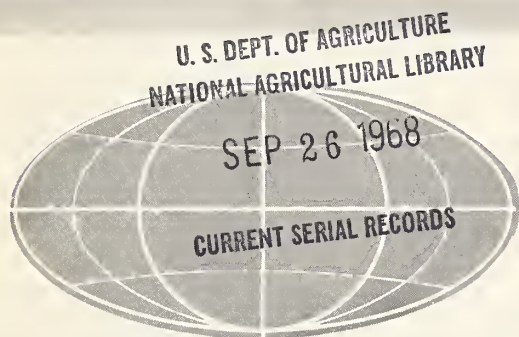


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The Republic of South Africa's Agricultural Trade:

PROJECTIONS TO 1970 AND 1975*

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Two broad characteristics make the agriculture of the Republic of South Africa different from that of most other countries: An unusual combination of climate and geographic location; and unique institutional factors. In considering the future of the Republic of South Africa's agriculture, it is important to understand the ways in which production, consumption, and trade are conditioned by these characteristics.

The climate of the Republic of South Africa ranges from subtropical in the Southwest to near-tropical in the Northeast and temperate in the high plains. This makes production of a wide variety of crops possible.

Climate and geographic location give the Republic of South Africa a favorable marketing advantage in world trade. Because the harvest season occurs early in the calendar year, the Republic is able to provide fresh deciduous and citrus fruit to major international markets--particularly in Western Europe--when prices are seasonally high.

However, large parts of the country have infertile soils and are subject to droughts. Consequently, it is extremely difficult to expand agricultural output at a sustained pace. This, in turn, limits the Government's ability to maintain orderly marketing conditions and to establish the Republic as a reliable long-term supplier or customer of specific farm products on the world market.

* This report is a summary of a detailed study, Projected Exports and Imports of Selected Agricultural Commodities of South Africa, by Arthur D. Little, Inc., Cambridge, Mass. The research was conducted under contract with the U.S. Department of Agriculture and constitutes a part of the Department's efforts to evaluate the long-term prospects for agricultural products throughout the world. The study results summarized here are those of the contractor and do not necessarily imply concurrence by the U.S. Department of Agriculture.

The agricultural economy of the Republic of South Africa is strongly affected by two institutional factors. The first is the Republic of South Africa's extensive network of organizations set up to perform various regulatory, and more especially, marketing functions. The second institutional factor is the general organization of the agricultural sector into (1) subsistence-oriented farms operated mainly by nonwhite (Bantu) farmers, and (2) market-oriented farms operated chiefly by white farmers.

In making commodity projections the contractor attempted to evaluate the effect of the policy of various Government agencies.. However, except for corn, the contractor did not consider changes likely to occur within subsistence farms to be great enough to be of significance in "shaping future trade and output conditions of South Africa's agricultural sector."

The projections are, of course, neither targets to be aimed at nor reliable forecasts of what will actually take place. They are meant rather to be estimates of the probable future supply of and demand for agricultural products, based on specific assumptions. The assumptions were framed to be as realistic as possible. The projections supply the bases for their own amendment in the future, should the underlying assumptions be changed as a result of technological developments, new information, or new policies.

POPULATION AND TRADE POTENTIALS

The population of the Republic of South Africa was projected to increase from 17,800,000 in 1965 to 19,945,000 by 1970 and 22,238,000 by 1975. This would be an annual increase of 2.2 percent. Per capita consumer expenditures were expected to increase at about 2 percent per year, rising from \$330 in 1965 to \$365 in 1970 and \$405 in 1975.

Projections of the demand, supply, and trade potentials of individual agricultural commodities to 1970 and 1975 are shown in table 1. For comparative purposes, the table also shows the average supply, demand, and trade for 1960-65.

The projections rest on the basic premise that the Republic of South Africa's export potential and import needs for specific agricultural commodities depend on: (1) The rate at which production expands (while this is primarily a function of the area planted and yields, it would be influenced by prices and Government regulations); and (2) the rate at which consumption expands (this would be influenced by changes in population, per capita income, prices, consumer tastes, and buying habits).

EXPORT COMMODITIES

The Republic of South Africa's agricultural exports compete with those of the United States in the same major world or foreign markets.

The United Kingdom is by far the leading customer for South African agricultural commodities. This reflects traditional trading patterns established when South Africa was a British colony and, later, a member of the British Commonwealth. Other nations that buy significant amounts of South Africa's

Table 1.--REPUBLIC OF SOUTH AFRICA: Consumption, production, and trade of selected agricultural commodities, 1960-65, and projections for 1970 and 1975 1/

Commodity	1960-65 Average				1970 Projection				1975 Projection			
	Consump- tion	Pro- duction	Imports	Trade	Consump- tion	Pro- duction	Imports	Trade	Consump- tion	Pro- duction	Imports	Trade
Export commodities:												
Grains:												
Maize	3,966	5,213	--	1,744	5,337	8,624	--	3,287	6,557	10,406	--	3,849
Deciduous fruits:												
Peaches	93	235	--	142	154	367	--	213	199	469	--	270
Pears	57	124	--	67	93	196	--	104	107	271	--	164
Apricots	27	78	--	51	46	140	--	94	66	168	--	102
	9	33	--	24	10	36	--	26	12	37	--	26
Citrus fruits:												
Oranges	171	545	--	374	215	768	--	553	247	926	--	679
Lemons	142	484	--	342	178	656	--	478	200	786	--	586
Grapefruit	13	20	--	7	12	27	--	15	15	30	--	15
	16	41	--	25	25	85	--	60	32	110	--	78
Others:												
Pineapples	39	137	--	98	56	158	--	102	63	160	--	97
Peanuts	65	162	--	97	106	207	--	101	149	239	--	90
Mohair	--	5	--	5	--	8	--	8	--	10	--	10
Import commodities:												
Grains:												
Wheat	1,074	927	209	--	1,547	1,150	397	--	1,888	1,322	566	--
Rice 2/	60	2	58	--	127	2	125	--	201	2	199	--
Other:												
Cotton	35	11	25	1	68	19	50	1	97	28	70	1

1/ Difference between consumption and production for the 1960-65 period may not equal foreign trade, due to changes in inventories; in 1970 and 1975 it is due to rounding.

2/ Historical data cover the 1960-64 period only.

exports are West Germany, Japan, Italy, and--to a lesser degree--other western European countries.

Grains

Corn (maize): Corn is the Republic of South Africa's most important agricultural commodity in terms of value, volume of production and consumption, and area devoted to the crop. It is an important food item in the diet of a majority of South Africans and a staple food of the Bantus, who make up about 80 percent of the population.

Domestic consumption of corn reached a peak of about 473 pounds per capita in the 1951/52 marketing year and declined to about 450 in the early 1960's. Rising incomes, urbanization, and changes in eating habits will probably further decrease human consumption of corn. However, this decrease will probably be more than offset by an increase in livestock feeding.

The production projection of 8.6 million short tons in 1970 and 10.4 million tons in 1975 assumes a modest 5.6 percent increase in land area from 1964 to 1970 and a 12.7 percent increase from 1964 to 1975. Yields on white farms are expected to increase 52 percent from 1964 to 1970 and 71 percent from 1964 to 1975. No significant increases in productivity are expected in Bantu reserves.

Deciduous Fruits

Deciduous fruit orchards occupy only about 2 percent of the cultivated land area in the Republic of South Africa, yet earn about 10 percent of the foreign exchange received from agricultural exports. Exports of both fresh and canned fruits have increased significantly during the past decade, while exports of dried fruits declined.

South Africa has an economic advantage in the exportation of fresh deciduous fruit, being able to supply European markets during Europe's winter season. Only Argentina and Australia are significant competitors for this market. In recent years, however, canned fruits have become more important than fresh fruits as an export item. About two-thirds of the peach trees and nine-tenths of the apricot trees are of the canning varieties. Only about 10 percent of the canned fruits are sold for domestic consumption.

Domestic consumption of dried fruit about equals that of canned fruit, but dried fruit production is much less. Only about 25 percent of the dried fruits are exported.

Peaches: The growing domestic demand for peaches is also primarily the result of rising incomes. From 1955 to 1965, the per capita consumption of peaches (on a fresh basis) increased from 6.5 pounds to 8.2 pounds. About three-quarters of these were eaten fresh. Projected consumption for 1970 and 1975 is 9.3 and 9.6 pounds per capita, respectively.

Peach production has increased rapidly since the mid-1950's and is expected to continue to increase through 1975. Yields are low now, but are expected

to rise with improved varieties, selective planting on more suitable soils, and increased use of irrigation water.

Projections of South African peach production, consumption, and exports, compared with the average for 1960-65 are:

	<u>1960-65</u>	<u>1970</u>	<u>1975</u>
	<u>Short tons-fresh equivalent weight</u>		
Production	123,567	196,300	270,800
Consumption	56,766	92,565	106,675
Fresh	43,117	74,554	86,239
Canned	7,868	11,030	12,653
Dried	5,781	6,981	7,783
Exports	66,801	103,735	164,125

Pears: Pears are not as popular as peaches in South Africa, although domestic consumption has increased significantly during the past decade and is expected to continue to increase. Projected per capita consumption for 1970 and 1975 is 4.6 pounds and 5.9 pounds respectively--an increase from an average of 3.2 pounds for 1960-65. About three-quarters of the domestic consumption is in the form of fresh pears. Of the remainder, dried pears are the most popular, and consumption in this form is increasing faster than consumption of canned pears.

Production of pears has about doubled in the last decade, primarily from an increase in the number of trees rather than gains in yield. The number of trees increased from 1 million in 1950 to 1.7 million in 1960. Expectations are for 1.8 million full bearing trees in 1970 and 2.1 million in 1975. Assuming a modest increase in yields by 1970 and 1975, pear production is projected to increase 78 percent over the 1960-65 average by 1970 and 114 percent by 1975.

Apricots: Data on apricot consumption fluctuate greatly. Some of this is due to measurement difficulties, while the rest is due to fluctuations in production. Over the long run, per capita consumption showed no significant trend. The increase in total consumption comes mainly from population increases. Since per capita consumption rates have not changed significantly in the past decade, projections for 1970 and 1975 were obtained by multiplying the projected population by the average consumption for the 1960-65 period.

Apricot production is not expected to increase much in the long run. Because of a heavy tree blight, many fruit growers have not replanted apricot trees when they passed their bearing age. However, offsetting the decline in trees is an expected increase in yields. Production of apricots is projected at 36,400 short tons in 1970 and 37,200 tons in 1975.

Citrus Fruits

Shipments of fresh citrus fruits, the bulk of citrus exports, increased from 115,000 short tons in the 1947/48 marketing year to 341,000 short tons in 1965/66. Citrus fruits rank third among the Republic of South Africa's agricultural exports.

The citrus industry is primarily geared to the export market where growers receive about 7 times the price of fruit sold domestically. This is due to a limited domestic demand for citrus that is easily oversupplied, resulting in depressed prices. Also, the fruit sold abroad commands a premium price, because it is of a high quality and supplies the European market in the off-season.

Processors have also become an important outlet for South Africa's citrus crop. The amount of fruit processed, primarily oranges, has increased sixfold since 1947/48, from 15,000 short tons to over 100,000 short tons in 1965/66. This includes juices, canned fruit salads, and marmalades.

Citrus production nearly tripled from 1947 to 1965. Most of the increase has been the result of more and larger orchards instead of higher yields. Citrus is grown over a wide area with varying climatic conditions. Because of this, complete crop failure is unlikely. However, destructive winds, droughts, and hail make citrus production in South Africa more hazardous than in the United States.

Oranges: Projections of the Republic of South Africa's future orange production, consumption, and exports for 1970/71 and 1975/76, compared with the 1965/66 marketing year are:

	<u>1965/66</u>	<u>1970/71</u>	<u>1975/76</u>
	<u>Short tons-fresh equivalent weight</u>		
Production.....	539,980	656,250	786,250
Local consumption	168,626	178,414	199,914
Fresh	160,540	169,535	189,023
Processed	8,086	8,879	10,891
Exports	371,354	477,836	586,336
Fresh	298,585	397,927	488,314
Processed	72,769	79,909	98,022

Tree numbers most likely will continue to increase, but at a slower rate, while yields are expected to increase faster than in the past.

Grapefruit: During the 1950's, citrus growers in the Republic of South Africa increased their grapefruit orchards from 260,000 to 760,000 trees.

Plantings are expected to continue to increase during the 1960's but at a slower rate, since most of the favorable land has already been planted. Yields are also expected to increase from about 190 pounds per tree in 1960 to about 200 pounds per tree by 1970 and 210 pounds by 1975.

Per capita consumption is estimated at 2.46 pounds in 1970 and 2.92 pounds in 1975. Consumption, which was less than 1 pound per capita in the 1950's, increased to over 2 pounds by 1962.

Lemons: The estimated number of lemon trees in the Republic of South Africa increased rapidly from 200,000 in 1950 to over 800,000 in 1960. Bearing trees were listed at 135,000 in 1950 and about 300,000 in 1960. The number of trees is not expected to increase much in the near future, but bearing trees are projected at 600,000 for both 1970 and 1975. Yields are expected to reach 90 pounds per bearing tree by 1970 and 100 pounds by 1975.

Domestic consumption, which in most recent years has been less than 1 pound per capita, is expected to reach 1.24 pounds per capita in 1970 and 1.32 pounds in 1975.

Other Commodities

Pineapples: The Republic of South Africa ranks tenth in world pineapple production. Three-quarters of the crop is processed primarily for export. The rest is consumed domestically, mainly as fresh pineapple. The export market for fresh pineapples has been limited and is not expected to increase significantly in future years.

Domestic per capita consumption of fresh pineapples more than doubled during the 1950's to 4.5 pounds, but then declined to about 3 pounds per capita in 1965. Domestic demand for canned pineapples has been more erratic, and appears to be correlated with the amount produced and the price.

Production increased significantly from 50,000 short tons in 1950 to over 165,000 tons in 1960. It declined after that. In 1964, production was only 107,000 tons. The decline was the result of marginal land being retired from pineapple production as the price dropped. Yields, however, rose significantly as marginal land was retired.

The area devoted to pineapples is expected to stabilize at about 19,000 acres by 1970 and 1975. However, yields should increase slightly by 1970 and 1975.

Consumption is estimated at 5.6 pounds per capita for 1970 and 5.7 pounds for 1975. Of this, 4.14 pounds in 1970 and 4.16 pounds in 1975 are expected to be consumed fresh.

Peanuts: The Government of the Republic of South Africa launched a campaign to increase oilseed production in 1946. Consequently, the area planted to peanuts increased over 500 percent between 1946 and 1963. Output rose from 31,000 short tons to 191,000 short tons during the same period.

Although some peanuts are eaten as nuts, most are pressed for oil. Since

vegetable oils are relatively interchangeable, the amount of peanut oil available for export is generally determined by production of the less expensive sunflower seed oil. The Government's policy is to fill domestic oil needs before exports are made, since export prices are usually below domestic prices. Thus, yearly export sales of peanuts or peanut oil fluctuate widely.

Projected peanut production, consumption, and exports in 1970 and 1975, compared with 1960-64 averages are:

	<u>1960-64</u> ^{1/}	<u>1970</u>	<u>1975</u>
	- - - - - <u>Short tons</u> - - - - -		
Production	161,679	207,430	239,480
Consumption	55,998	106,216	149,207
Edible	13,133	19,525	24,491
Oil (peanut equivalent) ..	42,865	86,691	124,716
Exports	96,650	101,214	90,273

^{1/} Differences due to seed and feed use and loss.

It is estimated that South Africa's vegetable oil needs will be about 76,000 short tons by 1970 and 100,000 tons by 1975. Of this, 37,600 tons and 44,000 tons are expected to be supplied from sunflower seed in 1970 and 1975 respectively. The remainder, 39,000 tons for 1970 and 56,000 tons for 1975, would be supplied from the projected 86,691 tons of peanuts for oil in 1970 and 124,716 tons in 1975.

South Africa's major competitor in the world peanut oil market is the United States. Because of the difference in efficiency of production between the two countries, South Africa finds the export market unattractive and will probably make little or no effort to increase its share of this market.

South Africa has established a rather stable export market for confectionery peanuts that is expected to increase in the future.

Mohair: The Republic of South Africa ranks third, following the United States and Turkey, as a producer of mohair. These 3 countries produce nearly all of the world's mohair. South Africa's share of the world market has increased during the past decade, while Turkey's has decreased. South Africa's mohair is reported to be of better quality than Turkey's.

South Africa produces about 20 percent of the world's output of mohair, but consumes only about 3 percent. Because of its high price, mohair is more marketable in relatively high income countries. It is expected that nearly all of South Africa's mohair production in 1970 and 1975 will be exported in either raw or processed form.

Larger production is expected to come entirely from increases in the number of goats, since yield is not expected to increase if quality is to be maintained. Projections of production and exports of mohair in 1970 and 1975, compared with 1963, are:

	<u>1963</u>	<u>1970</u>	<u>1975</u>
Number of goats (1,000's).....	1,500	2,000	2,600
Yield (pounds per goat) <u>1/</u>	7.36	7.60	7.60
Production (millions of pounds) <u>1/</u>	11.039	15.20	19.76
Exports (millions of pounds) <u>1/</u>	10.874	15.20	19.76

1/ Raw weight.

IMPORT COMMODITIES

The United States is a major supplier to the Republic of South Africa, especially of the 3 commodities studied. During 1960-65, the base period of the study, South Africa received 82 percent of its rice imports, 43 percent of its cotton imports, and 17 percent of its wheat imports from the United States. The United States was the chief supplier of both rice and cotton and ranked third as a supplier of wheat.

Grains

Wheat: The Republic of South Africa's second most important grain crop, wheat, is grown on approximately one-eighth of the land used for field crops. Production has increased more than 150 percent during the last 2 decades. But consumption has also increased, so that imports are still generally needed to supplement domestic wheat production. Much of this increase in consumption is due to the substitution of wheat for corn by the non-European population, especially by those who migrate from agricultural districts to urban centers.

The output of wheat is expected to reach 1.2 million short tons by 1970 and 1.3 million tons by 1975. This assumes a 7 percent increase in area from 1963 to 1970 and a 9 percent increase from 1970 to 1975. Yields are expected to increase 11 percent and 6 percent during these respective periods. South Africa, however, is not expected to become self-sufficient in wheat production and will need to import to meet expected demand.

Rice: Since the Republic of South Africa produces only about 3 percent of its rice needs, it must depend on imports for the remainder. Domestic production dropped from about 3,500 short tons in 1959 to 2,000 tons in 1964 and is not expected to change significantly in the next decade.

The demand for rice in South Africa appears to be associated with higher incomes and urbanization. Apparently, it is little affected by relative prices of other grains.

Imports of rice are expected to more than double the 1964 level by 1970 and more than triple the 1964 level by 1975.

Others

Cotton: The Republic of South Africa's production of cotton has been rising rapidly but has not kept pace with consumption, which increased four-fold in the 15 years ending in 1965. As a result, imports rose from 11 million pounds in 1950 to 50 million pounds in 1965.

Rising incomes have increased the demand for textiles. This has led to government policies to expand the textile industry so the country would become more nearly self-sufficient in cotton products.

Cotton production increased from about 1 million pounds in 1948 to about 25 million in 1964, mainly from higher yields resulting from improved varieties and additional irrigation. Most of the cotton produced is an American upland type. South Africa has produced an exportable surplus of irrigated long staple cotton, but will probably curtail production of this in the future in favor of the dryland type. The irrigated land will probably be used for higher-valued crops.

Cotton production is expected to reach about 37.6 million pounds by 1970 and 55.4 million pounds by 1975. However, consumption is projected to increase to 135.4 million pounds in 1970 and 193.2 million pounds in 1975. Thus, South Africa is expected to increase its cotton imports.

METHODOLOGY

Preliminary projections of production were based on area analysis and appraisal of time trend forecasts for individual commodities in light of probable effects of alternative land use, the application of modern agricultural technology, Government incentive programs, prices, and costs of inputs.

Preliminary projections of consumption were obtained by relating changes in demand to changes in income, price, population, and consumer buying habits. Generally, the relationships were obtained from fitting least-squares multiple-regression equations of recent time series data. In general, the equation took on the following form:

$$Q_i^d = a + bY + cP_i + dT_i$$

Where Q_i^d = annual per capita quantity demand of commodity i (in physical measurements); Y = annual per capita disposable personal income; P_i = price of commodity i ; and T_i = other factors affecting the level of demand of commodity i (i.e., changes in taste, etc.). Income and prices were deflated to keep all data in constant terms.

As a last step, preliminary consumption estimates were reconciled with preliminary production estimates. In making this reconciliation, judgement became very important. Whenever the results of statistical analyses were inconsistent with the judgements and opinions of agricultural and economic experts, they were reexamined and modified to produce realistic and useful projections.

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